APPENDIX C

GLOSSARY

C-1. Abbreviations.

ARAR--Applicable or Relevant and Appropriate Requirements.

BDAT--Best Demonstrated Available Technology.

BSRs--Bioslurry reactors.

CERCLA--Comprehensive Environmental Response, Compensation, and Liability Act.

CFR--Code of Federal Regulations.

CLP--Certified laboratory procedure.

CRP--Community Relations Plan.

DERP--Defense Environmental Restoration Program.

DOT--Department of Transportation.

DQO--Data quality objective.

EE/CA--Engineering evaluation/cost analysis.

EPA--Environmental Protection Agency.

FS--Feasibility study.

FSP--Field sampling plan.

FUDS--Formerly Used Defense Sites.

GC/MS--Gas Chromatograph/Mass Spectrometry.

HSP--Health and Safety Plan.

HTW--Hazardous and Toxic Waste.

IAG--Inter-Agency Agreement.

ISA--Initial site assessment.

MCLs--Maximum Contaminant Limits.

NCP--National Oil and Hazardous Substances Contingency Plan.

NEPA--National Environmental Policy Act.

NPDES--National Pollutant Discharge Elimination System.

NPL--National Priority List.

OEW--Ordnance and explosive waste.

PA/SI--Preliminary assessment/site investigation.

POTW--Publically Owned Treatment Works.

PRP--Potentially responsible party.

PSI--Preliminary site investigation.

QAPP--Quality Assurance Project Plan.

QAQC--Quality analysis/quality control.

QC --Quality control.

RCRA--Resource Conservation and Recovery Act.

Rfds--Reference doses.

RFI/CMS/CMI--Facility Investigation, Corrective Measure Study/Corrective Measure Implementation.

ROD--Record of decision.

RPM--Responsible project manager.

RSDs--Risk-specific doses.

RSI--Removal site inspection.

RI/FS--Remedial Investigation/Feasibility Study.

SARA--Superfund Amendments and Reauthorization Act.

SAP-- Sampling and analysis plan.

SI--Site inspection.

SPHEM--Superfund Public Health Evaluation Manual.

TSCA--Toxic Substances Control Act.

WAD--Wet air oxidation.

C-2. Control Technology Terms.

ABS pipe--Abbreviation for pipes made of acrylonitrile butadiene styrene, a type of plastic.

Annular space--The space in a well between the well casing and sides of the borehole.

Aquifer Terms

Confined--An aquifer is confined if the upper boundary of the aquifer is determined by (or confined by) a relatively impermeable stratum (called an aquitard). The potentiometric surface of a confined aquifer is generally higher than this boundary.

Drawdown--The change in height of the water table (for unconfined aquifers) or potentiometric surface (for confined aquifers) radially around a well due to pumping.

Homogeneous--An aquifer is homogeneous if the hydraulic conductivity is independent of position in the aquifer. At any given point, therefore, hydraulic conductivity will be the same. Aquifers which do not have this characteristic are heterogeneous.

Hydraulic conductivity--A measure of the rate at which fluid flows through a porous medium. It is a function of the characteristics of both the fluid and the medium. It is sometimes called the coefficient of permeability.

Hydraulic gradient--The rate of change in hydraulic head between two points. It indicates the direction in which water will flow.

Hydraulic head--The sum of the fluid pressure due to water depth (pressure head) and elevation above an arbitrary datum (elevation head). This determines how high water will rise in a well penetrating the aquifer to a given depth.

Isotropic--An aquifer is isotropic if the hydraulic conductivity is independent of the direction of flow. At any given point, therefore, vertical hydraulic conductivity is equal to horizontal hydraulic conductivity. Aquifers which do not have this characteristic are anisotropic.

Leaky--An aquifer is leaky if there is inflow or outflow through the underlying or confining layer (i.e., the underlying or confining layer is “leaky”).

Potentiometric surface--An imaginary surface defining the height to which water would rise in a series of wells penetrating an aquifer. It is a measure of the hydraulic head of the aquifer. It is also called a piezometric surface.

Specific yield--Volume of water yielded per unit surface area per unit drop in the water table in an unconfined aquifer. In a confined aquifer, this

is called the storativity and is defined in terms of a unit drop in the potentiometric surface.

Transmissivity--An expression of the amount of water that can be extracted from an aquifer in a given amount of time. Typical units are gallons per day per foot or square meters per second. It is defined as the hydraulic conductivity times the saturated thickness of the aquifer.

Unconfined--An aquifer is unconfined when the water table defines the upper boundary of the aquifer. The potentiometric surface of an unconfined aquifer is generally at the water table. Unconfined aquifers are also called water table of phreatic aquifers.

Backfill--The operation of refilling an excavation. Also the material placed in an excavation in the process of backfilling.

Banquette--A local extension of the land side slope of a dike constructed to provide construction access or added stability where required.

Bedrock--Relatively impermeable rock lying in the position where it was formed and not underlain by any material other than rock.

Bentonite--A clay made of decomposed volcanic ash which swells when wetted.

CMP--Corrugated metal pipe.

Diatomaceous earth--Deposits of well-graded silaceous phytoplankton (diatoms) the size of very fine silt used primarily as a filter medium.

Diversion--The combination of a dike and a channel constructed immediately upslope of the dike, used to intercept surface flow.

Drainage area--That portion of the land surface which naturally drains across a given line of interest. It is an important factor in determining the quantities of water that can arrive at surface water control structures.

Eutrophic--A condition in a body of water which promotes nuisance algae growths. It is usually caused by high nutrient concentrations.

Fetch--Distance of open water, used in calculating wave height.

Freeboard--The distance between design peak water levels and the top of a structure such as a levee or dike. It is especially important for earthen structures in providing a measure of safety to prevent overtopping.

Gabion--A mesh container filled with rocks or stones used in the construction of dams, channels, and basin sidewalls.

Grade--The angle of a structure across the slope. A dike of 0 percent grade would, therefore, cause water to pond behind it while a positive grade would allow water to flow along the dike.

Ground-water (or water) table--The upper limit of the part of the soil or underlying rock material that is wholly saturated with water. The locus of points in soil water at which the hydraulic pressure is equal to atmospheric pressure.

Gunite--A trademark for a concrete mixture sprayed under pressure over steel reinforcements.

Neoprene--A synthetic rubber produced by the polymerization of chloroprene; it is highly resistant to oil, heat, light, and oxidation.

Nomograph--A diagram used with a straightedge to find dependent variables when independent variables are given. For example, given slope, discharge, and velocity of a parabolic channel, it is possible using a nomograph to find necessary top width and channel depth.

NPDES--National Pollutant Discharge Elimination System.

Number 200 sieve--Instrument which allows only soil with particle size smaller than fine sand (0.074 nun) to pass through.

Proctor density--Maximum density on a smooth curve of dry soil density versus soil moisture content determined by the standard Proctor density test. Also called the standard American Association of State Highway Officials (AASHO) density.

PVC--Polyvinylchloride; a type of plastic.

Remedial action--Defined by CERCLA, Section 101(24), as “those actions taken.., in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment.” In the context of this manual it also includes removal actions.

Riprap--Broken rock, cobbles, boulders, or similar material placed on earth surfaces such as a levee or dike for protection against soil erosion due to the action of water.

Run-off--Any water, leachate, or liquid which flows over land from onsite to offsite, or that portion of precipitation which flows over land.

Run-on--Any water, leachate, or liquid which flows from offsite to onsite.

Sec-marsh--A unit of viscosity. It is measured by means of a standard test using a marsh funnel. A liquid which takes 40 seconds for 964 cubic centimeters to drain from a marsh funnel is said to have a viscosity of 40 sec-marsh. Water has a viscosity of 28 sec-marsh.

Slope--Rate of change in elevation of the land surface. A slope defined by a horizontal distance of 2 meters and a vertical rise of 1 meter can be

expressed as a fraction (1/2 or 0.5), a percent (50 percent), or a ratio (2:1).

Slope length--The distance along a slope between successive natural or man-made obstacles which impede the flow of surface water. It is an important factor in determining a slope*s resistance to erosion.

Slope steepness--The average slope of the land surface. It is an important factor in determining a slope*s resistance to erosion.

Soil Terms.

Soil--1. The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

2. A kind of soil; that is, the collection of soils that are alike in specified combinations of characteristics. Kinds of soil are given names in the system of soil classification. The terms “the soil” and “soil” are collective.

Grain-size distribution--A plot of the percent, by weight, of soil material retained versus the logarithm of the sieve opening.

Permeability--The ability of a soil to conduct or discharge water under a hydraulic gradient. It is a function of particle size, soil density, and degree of saturation.

Plasticity--The ability of a soil to deform rapidly without cracking, crumbling, or volume change and with relatively small rebound when the deforming force is removed.

Porosity--Percent void space (filled with air or other fluid) in a soil.

Strength properties--Properties of a soil which determine important characteristics such as ultimate bearing capacity, stability of embankments, and pressure against underground walls or barriers. These properties include soil density, consistency, compressibility, and shearing strength.

Texture--Measures the appearance of the soil in terms of particle size, shape, and gradation. It is important in determining other properties, such as maximum density, compressibility, and others.

Stabilize--To settle, fix in place, make nonmoving, often by means of vegetation or placement of surface materials such as straw. It usually refers to holding soil in place to prevent erosion or to allow seed to take root.

Staging area--A section of a site with adequate controls (e.g. , paved and drained, runon prohibited) for the safe storage and handling of drummed waste or other hazardous materials.

Straw-bale check dam--A temporary barrier constructed of staked down straw bales used to intercept sediment or slow down channel flow to allow vegetation to take hold. It has a life expectancy of three months or less.

Swale--A ditch, hollow, or depression.

Transpiration--Water loss from leaves and other plant organs to the atmosphere.

24-hour. 25-year rainfall--The intensity and quantity of water discharged by a storm with a 24-hour duration which has the probability of occurring once every 25 years. It has a 40 percent chance of occurring in any given year.

Uncontrolled hazardous waste disposal sites--A site where hazardous wastes have been disposed or spilled in such a way as to pose a threat to human welfare or the environment. Also called abandoned or inactive hazardous waste sites.

VCP--Vitrified clay pipes.

C-3. Treatment Technology Terms.

Aerobic--Biological processes which require molecular oxygen.

Alcohols--A class of organic compounds characterized by a hydroxyl group. Methanol, ethanol, and propanol are examples of alcohols.

Aliphatics--A class of organic compounds characterized by a chain arrangement of carbon atoms.

Amines--A class of organic compounds characterized by ammonia with one or more hydrogens replaced by an alkyl group.

Ammonia--A colorless gas composed of nitrogen and hydrogen atoms which is extremely soluble in water.

Anaerobic--Refers to biological processes which require the absence of molecular oxygen.

Aromatics--A class of organic compounds characterized by one or more cyclic rings which contain double bonds. Benzene is a prominent member of this class.

Asphaltic bitumen--Black or dark-colored cement-like substance composed mainly of high molecular weight hydrocarbons.

BOD (Biochemical Oxygen Demand)--A measure of the relative oxygen requirements of wastewaters, effluents, and polluted waters. BOD values cannot be compared unless the results have been obtained under identical test conditions. The test is of limited value in measuring the actual oxygen demand of surface waters.

COD (Chemical Oxygen Demand)--A measure of the oxygen equivalent of that portion of the organic matter in a sample that is susceptible to oxidation by a strong chemical oxidant.

Colloidal particles--Particles that are so small that the surface activity has an appreciable influence on the properties of the particle.

Cyanide--A class of compounds characterized by the presence of a cyanide group which consists of a carbon atom triply bonded to a nitrogen atom.

DDD--Dichlorodiphenyldichloroethane.

DDT--Dichlorodiphenyltrichloroethane.

DNT. 2. 4--Dinitroaniline.

Detention time--The time period that a waste stream is retained in contact with a treatment process; also referred to as retention time.

EDTA--Ethylenediamine tetraacetic acid.

Effluent--A waste product discharged from a process.

Elutriate--Liquid phase of a wash which is recovered by filtering or decanting.

Ethers--A class of organic compounds characterized by an oxygen molecule singly bonded to two organic groups of atom; i.e., R-O-R where R represents an organic group.

Flocculation--The coalescence of a finely divided precipitate.

Halocarbons--A class of organic compounds which contain carbon, one or more halogens, and sometimes hydrogen.

Influent--A process stream entering the treatment system.

Immiscible--Liquids which cannot be mixed or blended to form a uniform solution (e.g., oil and water).

Insolation--Average solar flux reaching the earth*s surface, in watts per square meter.

Leachate--Any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous wastes.

Leachate plume--The volume which encompasses the spread of leachate from its source.

Metals--Elements which form positive ions when their salts are dissolved in water.

MLVSS (Mixed Liquor Volatile Suspended Solids)--Concentration of volatile suspended solids in a wastewater and microorganisms mixture of an activated sludge treatment process. Volatile suspended solids are the fraction of total suspended solids which are combustible at 550 °C. Volatile suspended solids levels are a rough approximation of the organic portion of the total suspended solids.

Nitrification--Oxidation of nitrogen to nitrates; typically in biological waste treatment, nitrogen present in ammonia is oxidized to form nitrate ions.

129 Priority Pollutants--List of toxic pollutants for which the Environmental Protection Agency is required to publish effluent standards under Section 307 of the Clean Water Act of 1977.

Organics--Compounds containing carbon.

PCBs (Polychlorinated biphenyls)--A group of toxic chlorinated hydrocarbons most commonly used as heat transfer fluids. PCBs are persistent in the environment and are a suspected carcinogen.

Pesticide--A broad term that includes all chemical agents used to kill animal and vegetable life which interfere with agricultural productivity regardless of their mode of action. DDT, chlordane, aldrin, and dieldrin are examples of pesticides.

Phenols--A class of organic compounds characterized by one or more hydroxy groups bonded to a benzene ring.

Phthalates--A class of organic compounds characterized by adjacent ester groups attached to a benzene ring. Examples of phthalates are Di-N-Butyphthalate, Diethylphthalate, and Phthalimide.

Polynuclear aromatics--A class of organic compounds characterized by three or more aromatic rings.

Posttreatment--Processing of waste streams to remove secondary pollutants which have been subject to a treatment process designed to remove the object pollutants; e.g., denitrification of a wastewater stream after biological treatment to lower BOD.

Pretreatment-- Processing of waste streams prior to a treatment process designed to remove the object pollutants; e.g., equalization and/or pH adjustment prior to biological treatment to reduce a wastewater BOD.

RDX--1,3,5-trinitro-1,3,5-triazacyclohexane.

Reagent--Any substance used in a reaction for the purpose of detecting, measuring, examining, or analyzing other substances.

Sludge--Any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment

plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

TDS (total dissolved solids)--Solids capable of passing through a standard glass fiber filter and dried to constant weight at 180 °C. Also referred to as filterable solids.

TKN (total Kieldahl nitrogen)--The sum of free ammonia and organic nitrogen compounds which are converted to ammonia by digestion.

TNT--2,4,6--trinitro-toulene.

Treatment--Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

TSS (total suspended solids)--Solids that either float on the surface of or are suspended in water, wastewater, or other liquids, and which are largely removable by laboratory filtering and referred to as nonfilterable residue.

Zeolites--Hydrated silicates of aluminum and sodium and/or calcium which are used as ion exchange resins.

☆U.S. GOVERNMENT PRINTING OFFICE: 1994-533-246/00002